

CLAIMS

What is claimed is:

1. A method of identifying a drug that inhibits an enzyme involved in the glyoxylate cycle of a microorganism, comprising:
 - 5 a) contacting the microorganism with a drug to be assessed for its ability to inhibit an enzyme involved in the glyoxylate pathway of the microorganism;
 - b) determining the ability of the microorganism to utilize two-carbon compounds as the sole carbon source,
- 10 wherein if the ability of the microorganism to utilize two-carbon compounds is reduced in the presence of the drug to be assessed, then the drug inhibits an enzyme involved in the glyoxylate cycle of the microorganism.
2. The method of Claim 1 wherein the microorganism is *M. tuberculosis*.
3. The method of Claim 1 wherein the microorganism is a fungus.
- 15 4. The method of Claim 3 wherein the fungus is a filamentous fungus.
5. The method of Claim 4 wherein the filamentous fungus is a member of a species selected from the group consisting of: Acremonium species, Aspergillus species, Claviceps species, Collertortichum species, Fusarium species, Monascue species, Neurospora species, Nodulisporium species, Penicillium species,
- 20 Pestalotiopsis species, Taxomyces species, Tolypocladium species and Trichoderma species.

6. The method of Claim 4 wherein the fungus is yeast.
7. The method of Claim 6 wherein the yeast is selected from the group consisting of: *S. cerevisiae* and *C. albicans*.
8. A method of identifying a drug that inhibits the virulence of a fungus
5 comprising:
a) contacting the fungus with a drug to be assessed;
b) determining whether an enzyme involved in the glyoxylate pathway of
the fungus is inhibited in the presence of the drug
10 wherein if an enzyme of the glyoxylate pathway of the fungus is inhibited in the
presence of the drug, then the drug inhibits virulence of the fungus.
9. The method of Claim 8 wherein the fungus is a filamentous fungus.
10. The method of Claim 9 wherein the filamentous fungus is a member of a species
selected from the group consisting of: Acremonium species, Aspergillus species,
Claviceps species, Collertortichum species, Fusarium species, Monascue
15 species, Neurospora species, Nodulisporium species, Penicillium species,
Pestalotiopsis species, Taxomyces species, Tolypocladium species and
Trichoderma species.
11. The method of Claim 8 wherein the fungus is yeast.
12. The method of Claim 11 wherein the yeast is selected from the group consisting
20 of: *S. cerevisiae* and *C. albicans*.

13. The method of Claim 12 wherein the enzyme of the glyoxylate pathway is selected from the group consisting of: isocitrate lyase (ICL1), malate synthase synthase (MLS1), malate dehydrogenase (MDH2), citrate synthase (CIT2), acetyl-CoA synthase (ACS1), CRC1, ACR1, YAT1, YER024w, YDR384c and fructose-1,6-biphosphatase (FBP1).
14. The method of Claim 8 wherein whether an enzyme of the glyoxylate pathway of the fungus is inhibited in the presence of the drug is determined using an infectivity assay.
15. A method of identifying a drug that inhibits the virulence of a yeast comprising:
- contacting the yeast with a drug to be assessed;
 - determining whether an enzyme involved in the glyoxylate pathway of the yeast is inhibited in the presence of the drug
- wherein if an enzyme of the glyoxylate pathway of the yeast is inhibited in the presence of the drug, then the drug inhibits virulence of the yeast.
16. The method of Claim 15 wherein the yeast is selected from the group consisting of: *S. cerevisiae* and *C. albicans*.
17. The method of Claim 16 wherein the enzyme of the glyoxylate pathway is selected from the group consisting of: isocitrate lyase (ICL1), malate synthase synthase (MLS1), malate dehydrogenase (MDH2), citrate synthase (CIT2), acetyl-CoA synthase (ACS1), CRC1, ACR1, YAT1, YER024w, YDR384c and fructose-1,6-biphosphatase (FBP1).

18. The method of Claim 15 wherein whether an enzyme of the glyoxylate pathway of the yeast is inhibited in the presence of the drug is determined using an infectivity assay.
19. A method of identifying a drug that inhibits the virulence of *C. albicans* comprising:
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- a) contacting the *C. albicans* with a drug to be assessed;
- b) determining whether an enzyme involved in the glyoxylate pathway of the *C. albicans* is inhibited in the presence of the drug
- 10 wherein if an enzyme of the glyoxylate pathway of the *C. albicans* is inhibited in the presence of the drug, then the drug inhibits virulence of the *C. albicans*.
20. The method of Claim 19 wherein the enzyme of the glyoxylate pathway is selected from the group consisting of: isocitrate lyase (ICL1), malate synthase synthase (MLS1), malate dehydrogenase (MDH2), citrate synthase (CIT2), acetyl-CoA synthase (ACS1), CRC1, ACR1, YAT1, YER024w, YDR384c and
- 15 fructose-1,6-biphosphatase (FBP1).
21. The method of Claim 19 wherein whether an enzyme of the glyoxylate pathway of the *C. albicans* is inhibited in the presence of the drug is determined using an infectivity assay.
22. A method of identifying a drug that inhibits the virulence of *C. albicans* comprising:
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- a) contacting the *C. albicans* with a drug to be assessed;
- b) determining whether isocitrate lyase of the *C. albicans* is inhibited in the presence of the drug

wherein if the isocitrate lyase of the *C. albicans* is inhibited in the presence of the drug, then the drug inhibits virulence of the *C. albicans*.

23. The method of Claim 22 wherein whether the isocitrate lyase of the glyoxylate pathway of the *C. albicans* is inhibited in the presence of the drug is determined using an infectivity assay.
24. A method of identifying a drug that inhibits the virulence of *C. albicans* comprising:
- a) contacting the *C. albicans* with a drug to be assessed;
 - b) determining whether malate synthase of the *C. albicans* is inhibited in the presence of the drug
- wherein if the malate synthase of the *C. albicans* is inhibited in the presence of the drug, then the drug inhibits virulence of the *C. albicans*.
25. The method of Claim 24 wherein whether an enzyme of the glyoxylate pathway of the *C. albicans* is inhibited in the presence of the drug is determined using an infectivity assay.
26. A method of treating an individual who is susceptible to fungal infection comprising administering to the individual a drug identified by the method of Claim 8.
27. A method of treating an individual who is susceptible to a yeast infection comprising administering to the individual a drug identified by the method of Claim 15.

28. A method of treating an individual who is susceptible to a *C. albicans* infection comprising administering to the individual a drug identified by the method of Claim 19.
- 5 29. A method of treating an individual who is susceptible to a *C. albicans* infection comprising administering to the individual a drug identified by the method of Claim 22.
30. A method of treating an individual who is susceptible to a *C. albicans* infection comprising administering to the individual a drug identified by the method of Claim 24.
- 10 31. The method of Claim 26 wherein the individual is undergoing immunosuppressive or chemotherapeutic treatment.
32. The method of Claim 26 wherein the individual is neutropenic.
33. The method of Claim 32 wherein the individual is undergoing immunosuppressive or chemotherapeutic treatment.
- 15 34. The method of Claim 32 wherein the individual has a disease selected from the group consisting of: leukemia and lymphoma.
35. The method of Claim 26 the individual is T-cell deficient.
36. The method of Claim 35 wherein the individual is infected with HIV.

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37. A method of treating a fungus infection in an individual comprising administering to the individual a therapeutically effective amount of a drug that inhibits an enzyme involved in the glyoxylate cycle of the fungus.
38. The method of Claim 37 wherein the fungus is a filamentous fungus.
- 5 39. The method of Claim 38 wherein the filamentous fungus is a member of a species selected from the group consisting of: *Acremonium* species, *Aspergillus* species, *Claviceps* species, *Collertortichum* species, *Fusarium* species, *Monascue* species, *Neurospora* species, *Nodulisporium* species, *Penicillium* species, *Pestalotiopsis* species, *Taxomyces* species, *Tolypocladium* species and
- 10 *Trichoderma* species.
40. The method of Claim 37 wherein the fungus is yeast.
41. The method of Claim 40 wherein the yeast is selected from the group consisting of: *S. cerevisiae* and *C. albicans*.
42. The method of Claim 37 wherein the enzyme of the glyoxylate pathway is
- 15 selected from the group consisting of: isocitrate lyase (ICL1), malate synthase synthase (MLS1), malate dehydrogenase (MDH2), citrate synthase (CIT2), acetyl-CoA synthase (ACS1), CRC1, ACR1, YAT1, YER024w, YDR384c and fructose-1,6-biphosphatase (FBP1).